The influence of possession on the movement and physical demands in adolescent rugby union match-play

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Dale Read, Ben Jones & Kevin Till

BASES 2016 Conference

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Ball out of Play (BOP)

Phases of Play in Rugby

Attacking

Defending

Locomotion

Collisions
(tackles, rucks, mauls, scrums)

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The movement characteristics of English Premiership rugby union players

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Cahill et al. *JSS.* 2013;31(3):229-237.

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Original research

Positional demands of international rugby union: Evaluation of player actions and movements

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Quarrie et al. *JSAMS.* 2013;16(4):353-359.

RESEARCH ARTICLE

Movement Demands of Elite U20 International Rugby Union Players

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Cunningham et al. *PLoSOne.* 2016;11(4).

- Rehabilitation
- Recovery
- Player development
- Physical preparation

Train for the average demands –
unprepared for the most demanding passages of play – Tim Gabbett

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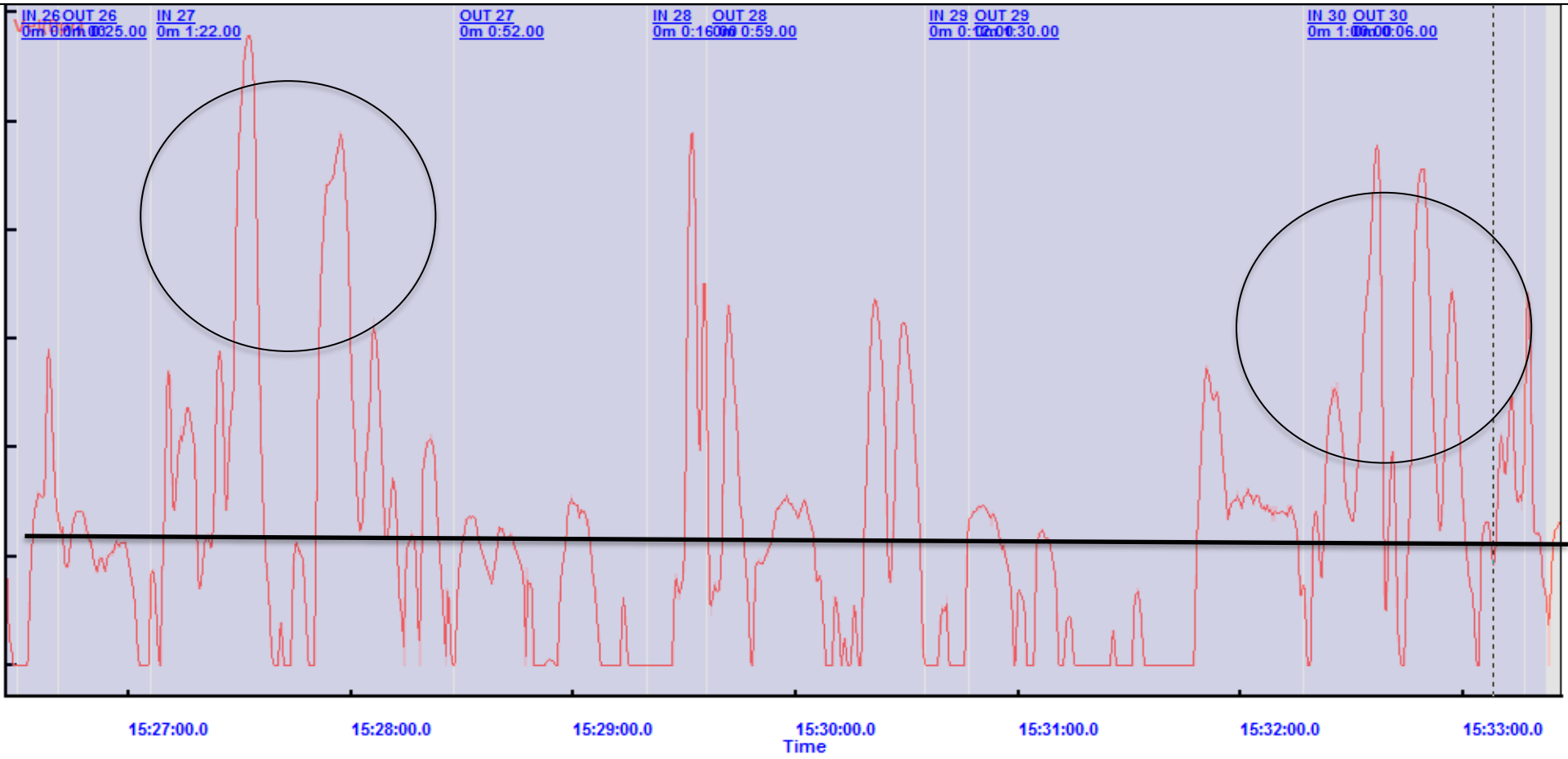

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Aim: To quantify the demands of attacking, defending and ball out of play.

Purpose: To establish the most demanding phase of play (attacking *vs.* defending) for forwards and backs.

Methods

- 1 Regional academy
- 12 matches (2014/2015 & 2015/2016 season)
- 59 male rugby union players [259 observations]
- Split into forwards (*n* = 28 [150]) and backs (*n* = 31 [109])
- Age: 17.6 ± 0.6 years
- Stature: 183.0 ± 6.8 cm
- Body mass: 89.4 ± 10.9 kg

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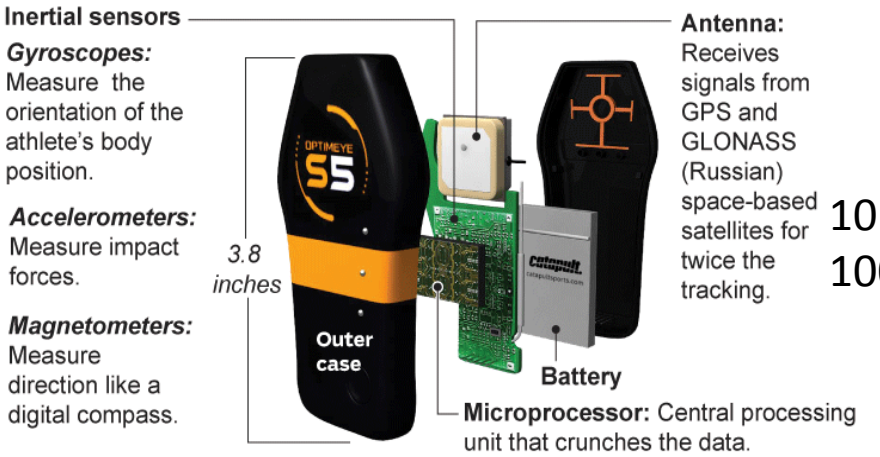
Analysed video recordings for attacking, defending and ball out of play timings



10 Hz global positioning system (GPS)
100 Hz accelerometer, gyroscope and magnetometer

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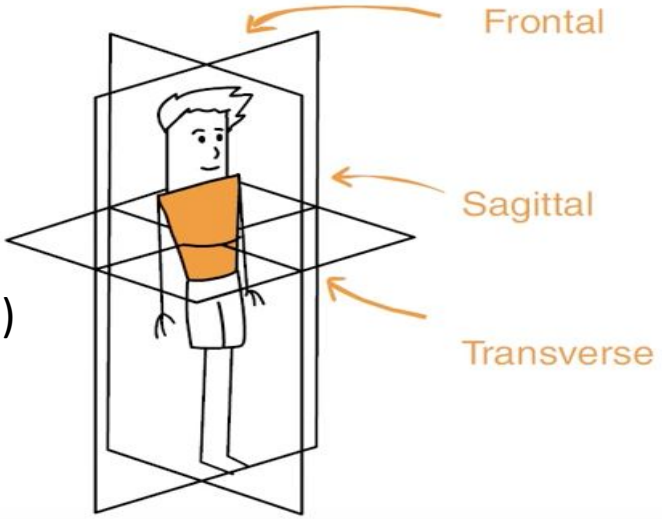
(RD) Relative distance ($m.min^{-1}$)
(PL) PlayerLoad™ per minute ($AU.min^{-1}$)



Statistical Analysis

- Linear mixed model
  - Random: 'players code' and 'match code'
  - Fixed: 'phases of play' (attack, defence, ball out of play)
- SWC established for each variable (0.2 between-subject standard deviation) – (RD = 4.7%; PL = 4.9%)
- Magnitude based inferences calculated and assessed as:
  - 25-75% *Possibly*
  - 75-95% *Likely*
  - 95-99.5% *Very Likely*
  - >99.5% *Almost Certainly*
  - 'Unclear' when crossing the upper and lower bound of the SWC
  - Differences shown as percentage change ±90% confidence limits

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Batterham & Hopkins *IJSPP*. 2006;11,51-57.
Hopkins et al. *MSSE*. 2009;41(1),3-12

Results

	Match Length		
Time (mins)	74.8 ± 3.3		
	Ball in play		Ball out of play
Time (mins)	27.4 ± 2.9 (37%)		47.4 ± 4.1 (63%)
	Attacking	Defending	Ball out of play
Time (mins)	12.7 ± 3.1 (17%)	14.7 ± 2.5 (20%)	47.4 ± 4.1
Cycles (*n*)	27 ± 9	31 ± 10	48 ± 3
Average Cycle Time (s)	26 ± 17	26 ± 18	59 ± 33
Minimum Cycle Time (s)	7	7	9
Maximum Cycle Time (s)	96	113	259

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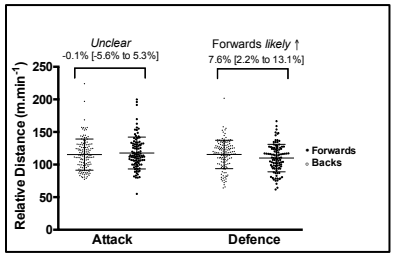
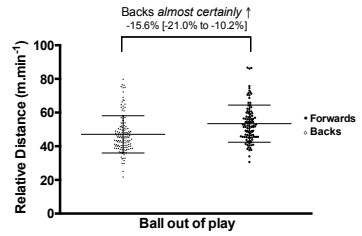
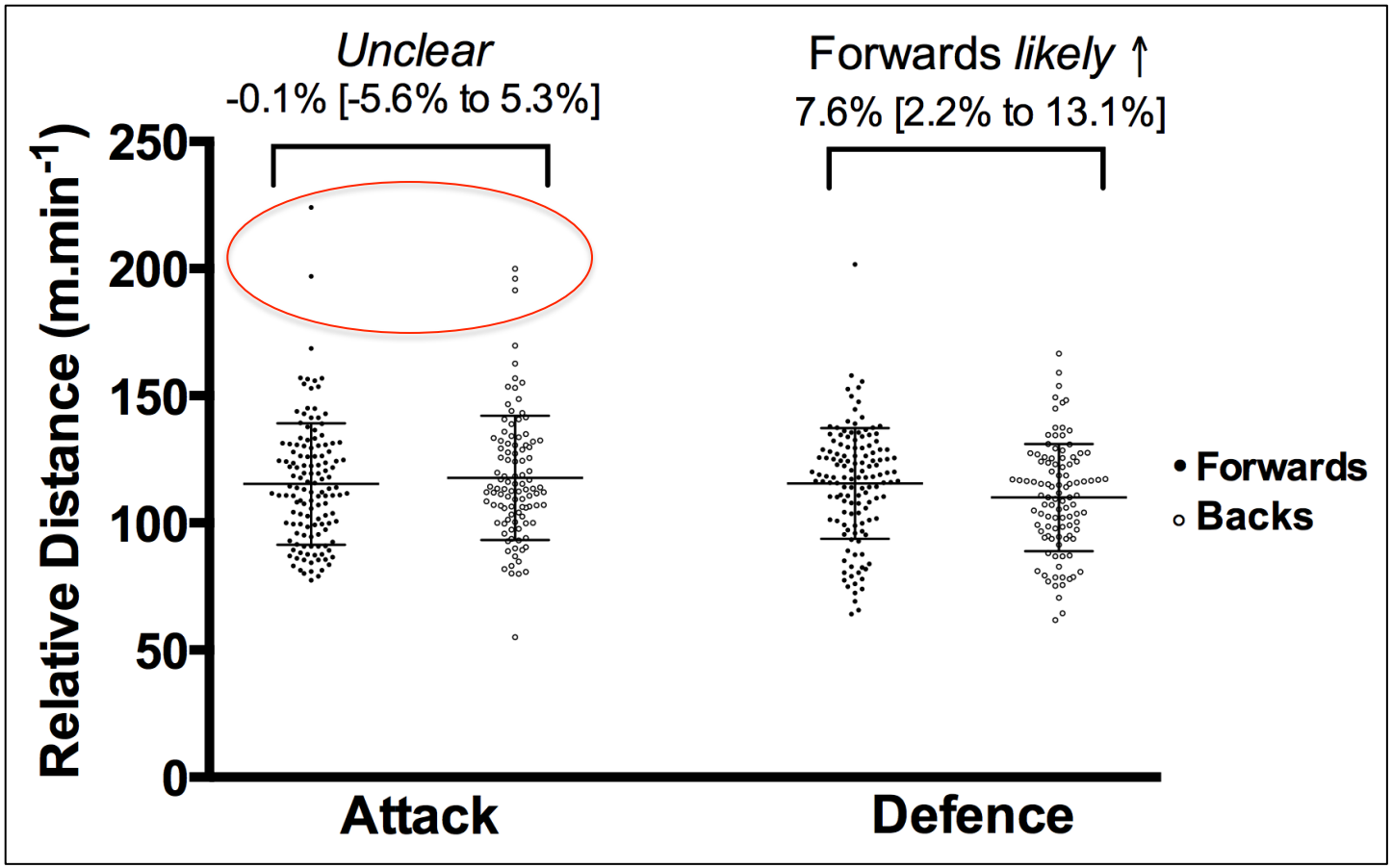
Forwards *vs.* Backs (RD)







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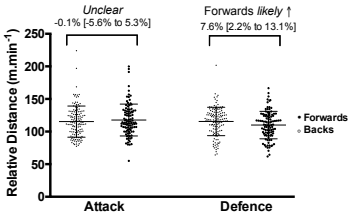
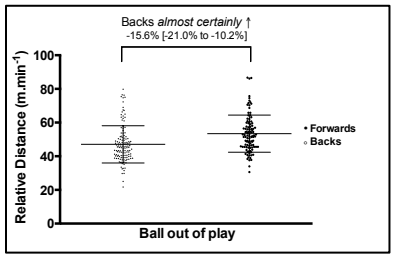
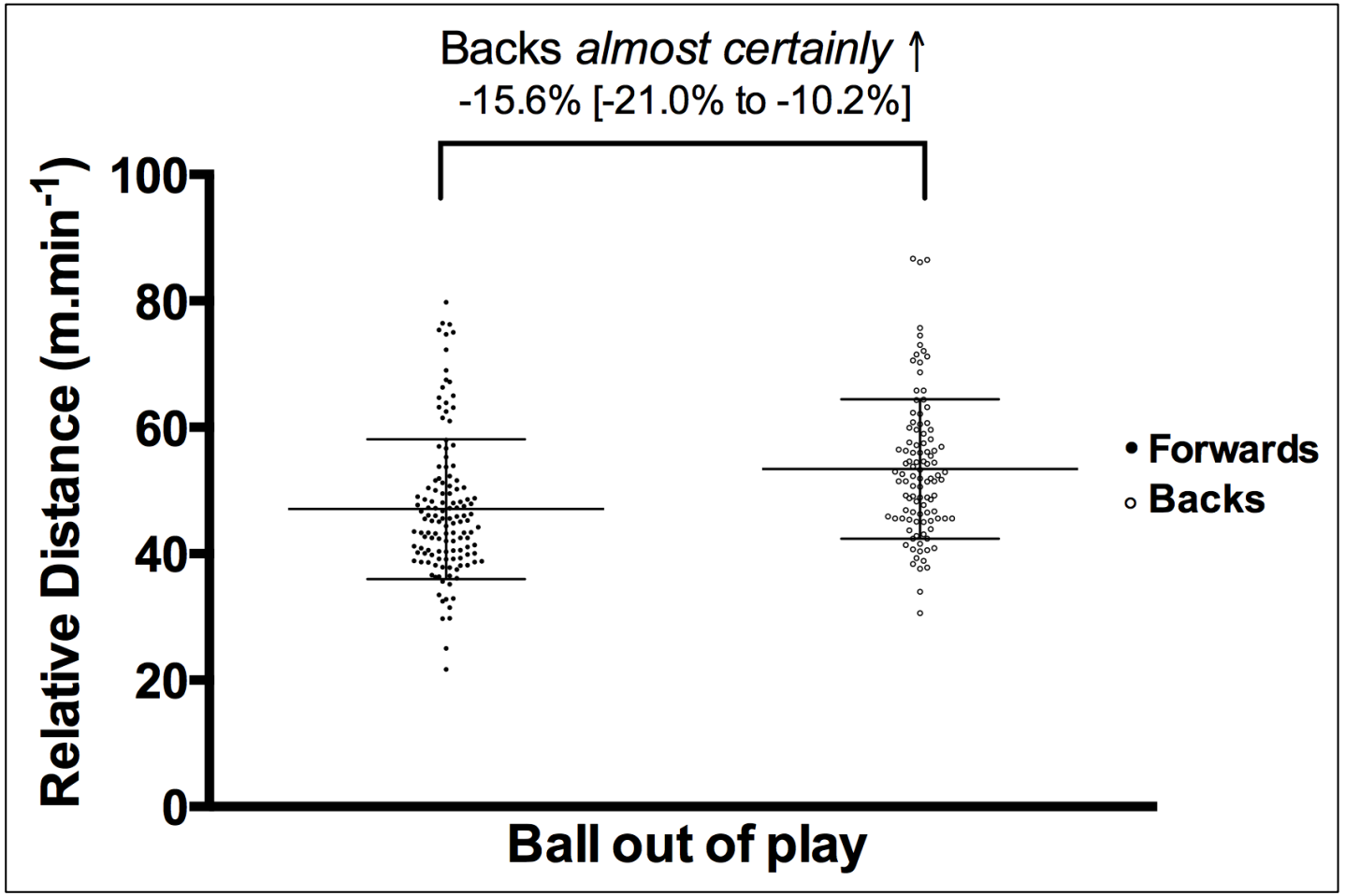
Forwards *vs.* Backs (RD)







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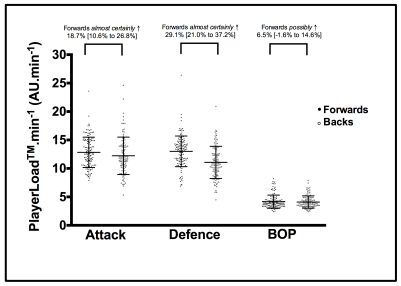
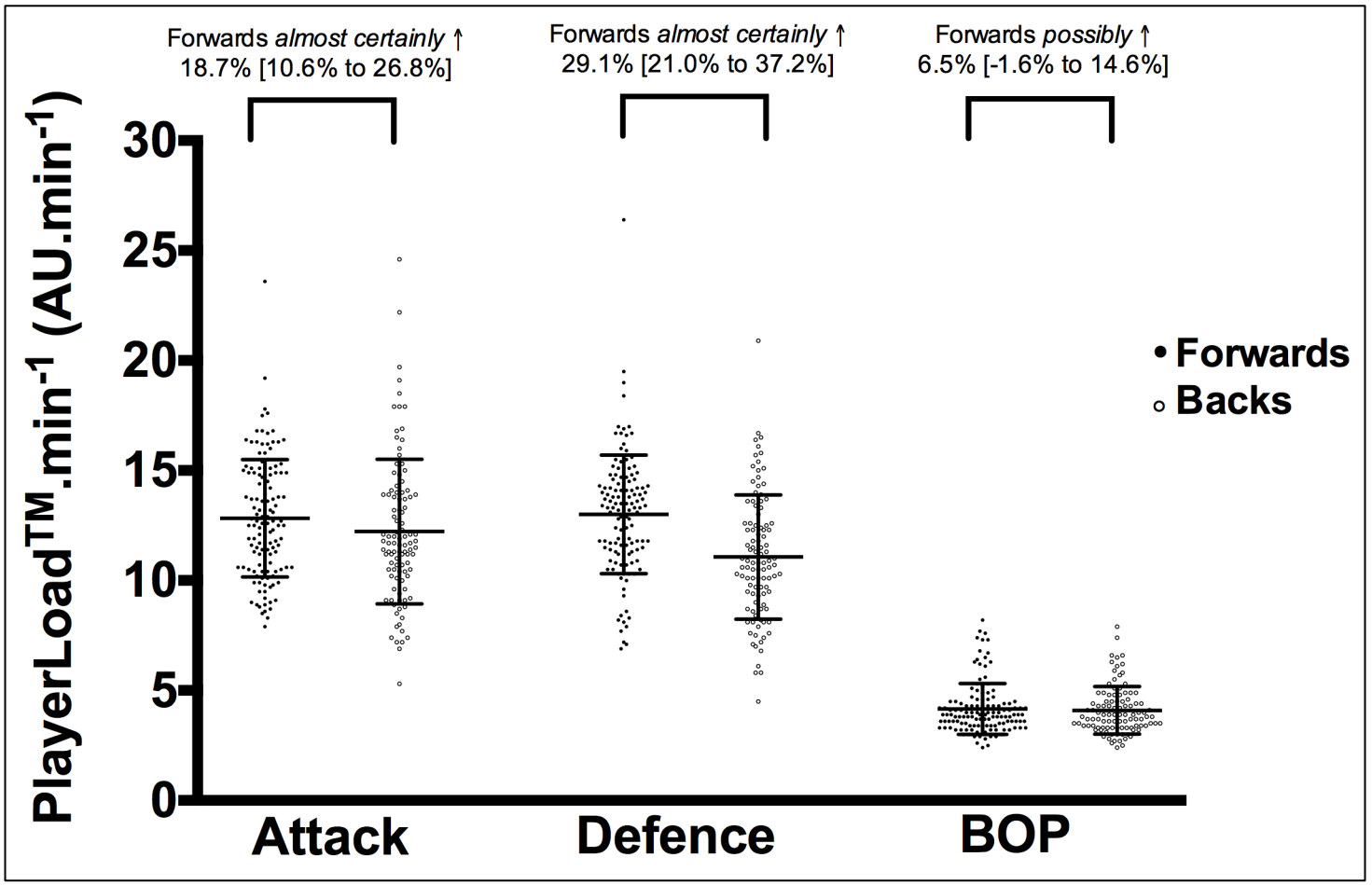
Forwards *vs.* Backs (PL)





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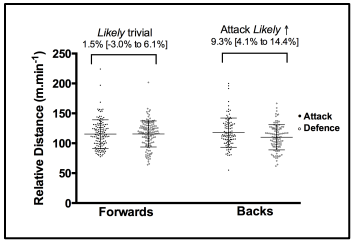
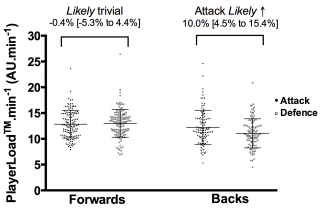
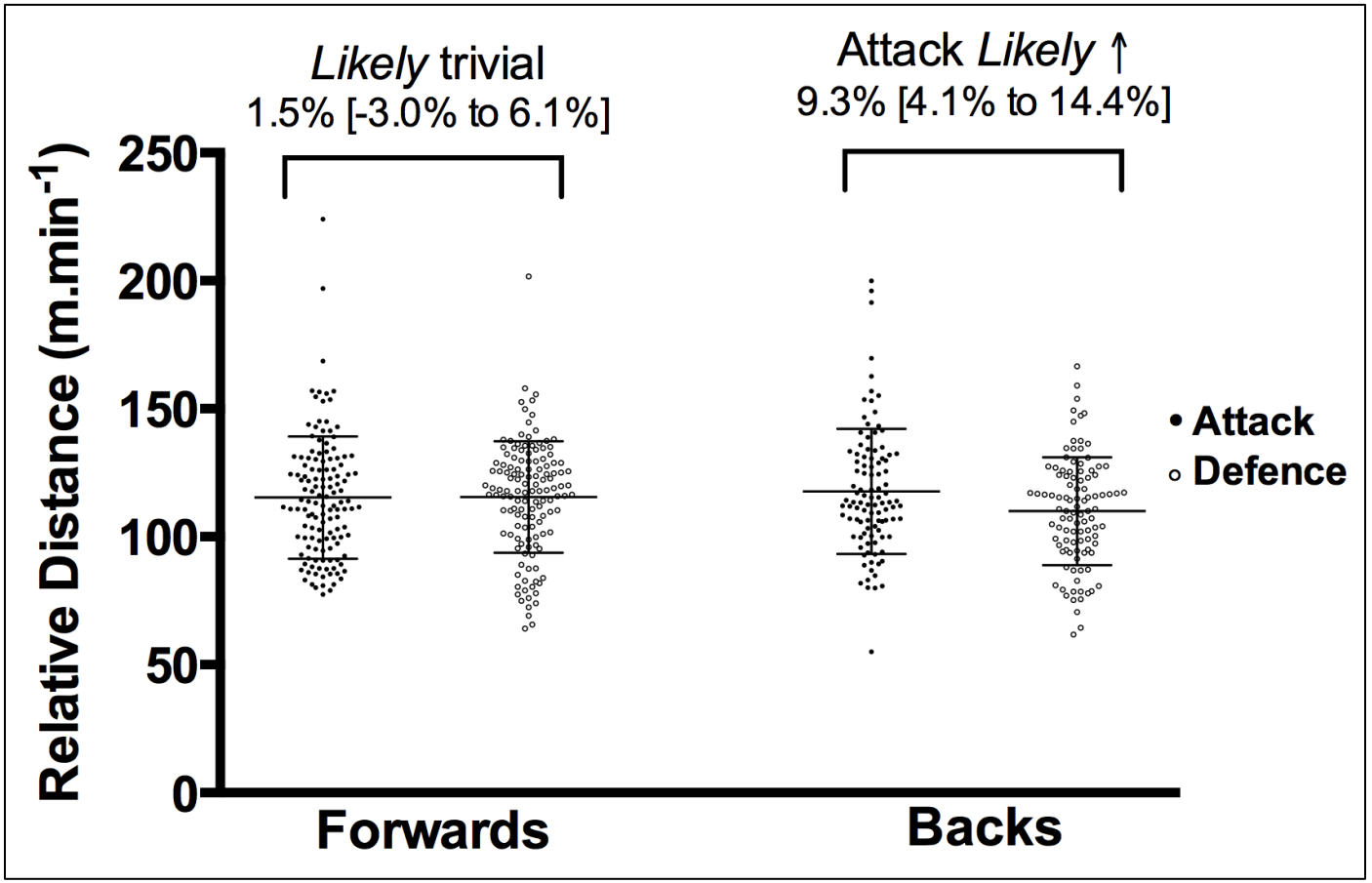
Relative Distance







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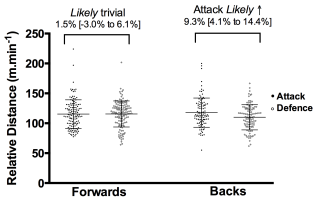
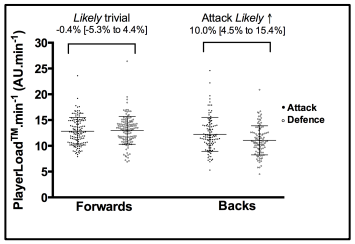
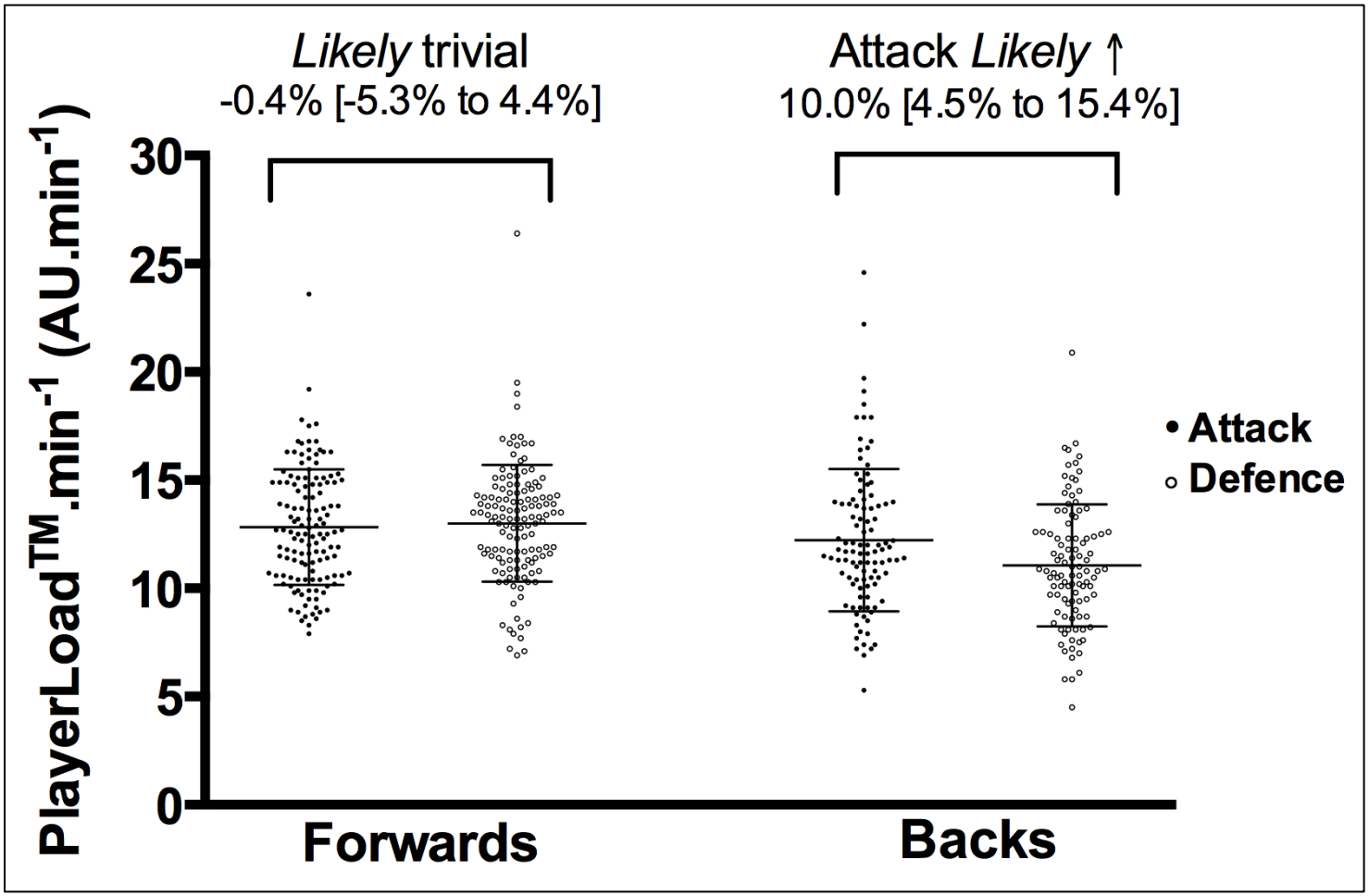
PlayerLoad™







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Key Findings

Movement demands in attack are unclear between forwards and backs

Movement demands in defence are harder for forwards than backs

Movement demands are higher in backs than forwards when the ball is out of play

PlayerLoad is higher in forwards than backs in all 3 phases of play
(suggesting they are involved in more collisions / static exertions)

Attacking and defending are similar for forwards

Attacking is harder than defending for backs

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HOW TO USE IT?

Worst case scenario protocol

PLAYER INVOLVEMENTS / DEVELOPMENT

12-15 mins of attacking or defending can be replicated in 30 mins of training

CONTEXT

70 $m.min^{-1}$ to 117 $m.min^{-1}$ = 2 $m.s^{-1}$ / 7 $km.h^{-1}$. Consider the decision making, change of direction, communication, technical rugby skill, scrums, etc

RUNNING GAME FOR BACKS?

Future studies should analyse match-play data using a similar method

Locomotor data split into velocity zones would enhance the understanding

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